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### 1 [Pointing and manipulation: An interface for creating and manipulating curves using a high degree-of-freedom curve input device](#)



Tovi Grossman, Ravin Balakrishnan, Karan Singh

April 2003 **Proceedings of the SIGCHI conference on Human factors in computing systems CHI '03**

Publisher: ACM Press

Full text available: [pdf\(2.00 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Current interfaces for manipulating curves typically use a standard point cursor to indirectly adjust curve parameters. We present an interface for far more direct manipulation of curves using a specialized high degree-of-freedom curve input device, called ShapeTape. This device allows us to directly control the shape and position of a virtual curve widget. We describe the design and implementation of a variety of interaction techniques that use this curve widget to create and manipulate other v ...

**Keywords:** curve editing, high degree-of-freedom input

### 2 [Exploring interactive curve and surface manipulation using a bend and twist sensitive input strip](#)



Ravin Balakrishnan, George Fitzmaurice, Gordon Kurtenbach, Karan Singh

April 1999 **Proceedings of the 1999 symposium on Interactive 3D graphics SI3D '99**

Publisher: ACM Press

Full text available: [pdf\(716.04 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** 3D modeling, ShapeTape, bimanual input, curves, gestures, input devices, interaction techniques, surfaces

### 3 [Manipulating space: Tangible NURBS-curve manipulation techniques using graspable handles on a large display](#)



Seok-Hyung Bae, Takahiro Kobayash, Ryugo Kijima, Won-Sup Kim

October 2004 **Proceedings of the 17th annual ACM symposium on User interface software and technology UIST '04**

Publisher: ACM Press

Full text available:  [pdf\(2.07 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents tangible interaction techniques for fine-tuning one-to-one scale NURBS curves on a large display for automotive design. We developed a new graspable handle with a transparent groove that allows designers to manipulate virtual curves on a display screen directly. The use of the proposed handle leads naturally to a rich vocabulary of terms describing interaction techniques that reflect existing shape styling methods. A user test raised various issues related to the graspable ...

**Keywords:** NURBS-curve manipulation, automotive design, graspable handle, graspable user interface, large display, two-handed input


#### 4 [Projectors: advanced graphics and vision techniques](#)



Ramesh Raskar

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available:  [pdf\(6.53 MB\)](#) Additional Information: [full citation](#)

#### 5 [Dissertation Abstracts in Computer Graphics](#)



January 1992 **ACM SIGGRAPH Computer Graphics**, Volume 26 Issue 1

**Publisher:** ACM Press

Full text available:  [pdf\(2.53 MB\)](#) Additional Information: [full citation](#)

#### 6 [Interactive shape editing: Industrial motivation for interactive shape modeling: a case study in conceptual automotive design](#)



Karan Singh

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

**Publisher:** ACM Press

Full text available:  [pdf\(624.89 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

As Computer Graphics makes rapid strides in various aspects of digital shape modeling it is easy to lose perspective of the larger motivations for digital shape modeling in design and animation. This chapter provides a high level view of shape modeling illustrated within the space of conceptual automotive design. Automotive design provides a unique perspective on digital shape modeling, where digital models are critical to downstream production processes but automotive designers almost exclusive ...

#### 7 [Sampling, synthesis, and input devices](#)



George W. Fitzmaurice, Ravin Balakrishnan, Gordon Kurtenbach

August 1999 **Communications of the ACM**, Volume 42 Issue 8

**Publisher:** ACM Press

Full text available:  [pdf\(284.25 KB\)](#)  [html\(41.15 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

#### 8 [Physically-based modeling: past, present, and future](#)



D. Terzopoulos, J. Platt, A. Barr, D. Zeltzer, A. Witkin, J. Blinn

July 1989 **ACM SIGGRAPH Computer Graphics, ACM SIGGRAPH 89 Panel Proceedings SIGGRAPH '89**, Volume 23 Issue 5

**Publisher:** ACM Press

Full text available:  [pdf\(3.65 MB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

My name is Demetri Terzopoulos and my co-chair, John Platt, and I would like to welcome you to the panel on Physically-Based Modeling -- Past, Present and Future. I'll start by introducing the panelists; the affiliations you see listed on the screen are somewhat out of date.

I'm Program Leader of modeling and simulation at the Schlumberger Laboratory for Computer Science in Austin, Texas, and I was formerly at Schlumberger Palo Alto Research. I'll speak on the subject of def ...

9 Final report of the GSPC state-of-the-art subcommittee



R. H. Ewald, R. Fryer

June 1978 **ACM SIGGRAPH Computer Graphics**, Volume 12 Issue 1-2

**Publisher:** ACM Press

Full text available:  [pdf\(7.85 MB\)](#) Additional Information: [full citation](#), [abstract](#)

This paper presents the final report of the ACM/SIGGRAPH Graphics Standards Planning Committee (GSPC) State-of-the-Art Subcommittee. This group's charter was to compare existing vector-oriented graphics packages to determine their similarities and differences. Eight graphics packages and the GSPC "Core System" were selected for review.

10 Bender: a virtual ribbon for deforming 3D shapes in biomedical and styling applications



Ignacio Llamas, Alexander Powell, Jarek Rossignac, Chris D. Shaw

June 2005 **Proceedings of the 2005 ACM symposium on Solid and physical modeling SPM '05**

**Publisher:** ACM Press

Full text available:  [pdf\(873.92 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In contrast to machined mechanical parts, the 3D shapes encountered in biomedical or styling applications contain many tubular parts, protrusions, engravings, embossings, folds, and smooth bends. It is difficult to design and edit such features using the parameterized operations or even free-form deformations available in CAD or animation systems. The Bender tool proposed here complements previous solutions by allowing a designer holding a 6 DoF 3D tracker in each hand to control the position an ...

**Keywords:** 6 DOF tracker, adaptive subdivision, biarc, deformation, space-warp

11 Status report of the graphic standards planning committee



Computer Graphics staff

August 1979 **ACM SIGGRAPH Computer Graphics**, Volume 13 Issue 3

**Publisher:** ACM Press

Full text available:  [pdf\(15.01 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#)

12 Geographic Data Processing



George Nagy, Sharad Wagle

June 1979 **ACM Computing Surveys (CSUR)**, Volume 11 Issue 2

**Publisher:** ACM Press

Full text available:  [pdf\(4.20 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**13 Bricks: laying the foundations for graspable user interfaces**

George W. Fitzmaurice, Hiroshi Ishii, William A. S. Buxton

May 1995 **Proceedings of the SIGCHI conference on Human factors in computing systems CHI '95****Publisher:** ACM Press/Addison-Wesley Publishing Co.Full text available: [html\(44.57 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**14 Abstracts—nuclear reactor codes**

Virginia Nather, Ward Sangren

January 1959 **Communications of the ACM**, Volume 2 Issue 1**Publisher:** ACM PressFull text available: [pdf\(3.51 MB\)](#) Additional Information: [full citation](#)**15 Seeing, hearing, and touching: putting it all together**

Brian Fisher, Sidney Fels, Karon MacLean, Tamara Munzner, Ronald Rensink

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04****Publisher:** ACM PressFull text available: [pdf\(20.64 MB\)](#) Additional Information: [full citation](#)**16 Recreational computer graphics: Recreational computer graphics**

Andrew Glassner

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06****Publisher:** ACM PressFull text available: [pdf\(13.82 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Computer graphics isn't just a bunch of algorithms and programs: it's a gymnasium for the visual imagination, and a tool for investigating the world around us. Graphics can help us understand nature, invent new kinds of patterns and shapes, build up the clarity of our own mind's eye, and experiment with construction tools that would inspire even the most classical sculptors and painters. Going beyond tools and technique, this course invites attendees to think about using computer graphics in new ...

**17 Operating system principles**

Per Brinch Hansen

January 1973 Book

**Publisher:** Prentice-Hall, Inc.Full text available: [pdf\(16.81 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)**From the Preface****MAIN GOAL**

This book tries to give students of computer science and professional programmers a general understanding of *operating systems*--the programs that enable people to share computers efficiently.

To make the sharing of a computer tolerable, an operating system must enforce certain rules of behavior on all its users. One would therefore expect the designers of operating

systems to do their utmost to make them as s ...

### 18 Towards a laboratory instrument for motion analysis



Ronald Baecker, David Miller, William Reeves

August 1981 **ACM SIGGRAPH Computer Graphics , Proceedings of the 8th annual conference on Computer graphics and interactive techniques SIGGRAPH '81**, Volume 15 Issue 3

**Publisher:** ACM Press

Full text available: [pdf\(684.77 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

Motion analysis is the systematic and usually quantitative study of the movements of humans, animals, organisms, cells, or other entities as recorded on movie film or video tape. Despite the utility of computer-aided motion analysis to many biological, social, and physical sciences, its role has been limited because it is so time-consuming and so expensive. Automated techniques can only be used on real images in very special cases; interactive techniques have involved labor ...

**Keywords:** Computer animation, Computer graphics, Display processor, Motion analysis, Raster graphics, Video disk

### 19 Software: VRPN: a device-independent, network-transparent VR peripheral system



Russell M. Taylor, Thomas C. Hudson, Adam Seeger, Hans Weber, Jeffrey Juliano, Aron T. Helser

November 2001 **Proceedings of the ACM symposium on Virtual reality software and technology VRST '01**

**Publisher:** ACM Press

Full text available: [pdf\(344.60 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

The Virtual-Reality Peripheral Network (VRPN) system provides a device-independent and network-transparent interface to virtual-reality peripherals. VRPN's application of factoring by function and of layering in the context of devices produces an interface that is novel and powerful. VRPN also integrates a wide range of known advanced techniques into a publicly-available system. These techniques benefit both direct VRPN users and those who implement other applications that make use of VR periphe ...

**Keywords:** input devices, interactive graphics, library, peripherals, virtual environments, virtual worlds

### 20 Facial modeling and animation



Jörg Haber, Demetri Terzopoulos

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

**Publisher:** ACM Press

Full text available: [pdf\(18.15 MB\)](#) Additional Information: [full citation](#), [abstract](#)

In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s ...

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